

Project Management Education in Project-oriented Societies

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Abstract

Project management competence is based on knowledge and experience. The provision of formal project management education programmes is essential to the development of the new profession project management. In this paper we discuss the development of project management education using the United Kingdom as a base case. We then describe the current state of education in project management in Austria, Germany and Switzerland and investigate new developments in Austria and Switzerland, initiated by project management initiatives programm I austria and SwissPM. Finally we give an overview of project management education in project-oriented societies around the world. The paper derives from the work of the Global Working Party on Education and the International Project Management Association (IPMA) research initiative into the Project-oriented Society.

Keywords

Project Management Education
Project-oriented Society
Project Management Initiatives
Project Management Competence

Introduction

The state of maturity of project management education in countries around the world is currently being investigated by two initiatives. These are:

1. the global working party for education in Project Management, (Turner and Huemann 2000)
2. the IPMA research initiative into the Project-oriented Society, (Gareis and Huemann 2001).

In this article, we report on what education in project management is provided in United Kingdom, and give an overview of the project management education and new developments in Austria, Germany and Switzerland.. We then give an overview on the current status in project management education in different countries around the world, drawing on the work of the two initiatives above.

Based on the definitions in the Oxford English Dictionary, Turner and Huemann (2000) define *education* as:

structured extended programmes to impart knowledge and develop competence and training as:

short courses to develop specific skills.

Provision of Project Management Education in the United Kingdom

We start by describing what project management education is provided in the United Kingdom, one of the more mature project-oriented societies. We use the developments in the United Kingdom over the last half a century as a base case to illustrate the developments that have occurred. We consider:

- tertiary education
- work-based programmes
- primary and secondary education

Tertiary Education in the United Kingdom

In the United Kingdom, the provision of education in project management started at the top and worked down. People started undertaking doctorates or masters degrees by research, and then offering post-experience education at masters degree level. From there it percolated down through the levels of tertiary education, and into secondary and primary education. Perhaps this was necessary; it was first necessary to train the trainers for lower levels. Perhaps also it was inevitable; interest at the higher levels creates interest at lower levels. In other countries that came later to project management education it was different. Taught masters degrees were offered first, either programmes specialising in project management, or with project management as an essential component on wider programmes. From there, it spread up and down to other levels. This was the case in Austria for instance.

Doctorates and Masters Degrees by Research

In the UK, the first doctorates in project management related subjects were done in the 1960s by some of the now leaders of the profession, Peter Morris, Martin Barnes and John Perry. It is now theoretically possible to do a research degree in almost any business, engineering, construction, building or information systems faculty. Rodney Turner has supervised or examined people at Bournemouth, Cranfield, Lancaster, Leeds Metropolitan, Loughborough and the Open Universities, and at Henley Management College. He is also aware of people doing doctorates at Herriot Watt, Leeds and Reading Universities, Imperial College, and UMIST. There are about 120 universities and university colleges in the UK, and so there are active doctoral research programmes in project management in at least 10% of them.

Taught Masters Degrees

In the United Kingdom, the first taught masters degrees in Project Management were offered by Cranfield University and Henley Management College in the late 1970s, sponsored by the Engineering Construction Industry Training Board, (ECITB). Because of the sponsor, these programmes were initially not generic, but focused on the construction industry. Since then, both programmes have become generic, and there are now a growing number of programmes offered, Table 1.

At some universities, generic programmes are offered. They cover the management of all types of projects. At others they tend to focus on projects of one type or another. Note that in the United Kingdom, it is not possible to give a degree the name of a specialist discipline. Thus the name Master of Project Management is not used. All the qualifications in the top part of Table 1 are called MSc (Project Management) or MBA (Project Management). (The title, Master of Project Management is used in other countries, for instance at the University of Limerick in Ireland and the University of Technology Sydney in Australia.)

Then there is a range of specialist degrees from related disciplines. These cover things like Construction Project Management or Risk Management, and are included in the bottom part of Table 1. Interestingly, to our knowledge there are no masters programmes in Information Systems Project Management, (although there are courses in Information Systems Management incorporating project management).

<i>Course Type</i>	<i>University/College</i>	<i>Faculty</i>	<i>Specialisation</i>
Project Management	Aberdeen University	Engineering	
	Cranfield University	Management	Generic
	GEC Dunchurch	Management	Generic
	Henley Management College	Management	Generic
	Lancaster University	Engineering and Computing	Generic
	Leeds Metropolitan	Management	
	Portsmouth University	Management	Defence
Specialist Disciplines	Herriot Watt		
	Loughborough	Construction Management	
	Reading	Construction Management	
	Southampton	Management	Risk Management
	South Bank University	Built Environment	Property Develop't
	Strathclyde	Management	Risk Management
	UMIST	Civil Engineering	Engineering
	UMIST	Civil Engineering	Developing Nations

Table 1. Taught master degrees in Project Management at the UK's Universities

Finally there are many other masters degree programmes which incorporate project management as a compulsory or optional module. Most MBA programmes include a course on operations management which will address project management, or include a project management module. Similarly many courses on engineering, construction or information systems will include a project management module.

With about 120 universities and university colleges in the UK, a little over 10% of them offer taught masters degrees in project management or closely related disciplines. A very large proportion would offer project management modules as part of other degree programmes. This figure of about 10% seems to be the level reached by the more mature countries, (Britain, Australia, New Zealand and Ireland, although with the latter two, 10% is just one university or university college each).

Bachelors Degrees

There are three bachelors degree programmes in project management in the UK, Table 2. You will see that all of these are from the building or construction industry. However, project management is also taught as a compulsory or optional module on many other programmes in management, engineering, construction or information systems. For instance, project management is a compulsory module on the programme of information systems management at Bournemouth University.

<i>Programme Type</i>	<i>University/College</i>	<i>Specialisation</i>
Bachelors degrees	Brighton University	Construction Management
	Central Lancaster University	Construction Management
	NE Wales Institute of Higher Education	Quantity Surveying
Certificate and diploma programmes	Cranfield University	Generic
	GEC Dunchurch	Generic
	Henley Management College	Generic

Table 2. Bachelors degrees or equivalent in project management in the UK

Rodney Turner is on record as saying the project management cannot be taught to undergraduates, that it is essentially a subject for post experience study, (Turner 1995). Clearly that is not now true, and perhaps it is part of the developing project management maturity of societies that as project-based ways of working become more widespread that people become more receptive to them at an earlier age. Rodney Turner is himself teaching project management modules on several undergraduate programmes in the Netherlands, and Martina Huemann in universities and Fachhochschulen in Austria. However, perhaps some of the sentiment remains true, in that post-experience and pre-experience people have different learning styles, which needs to be recognised by the educators. For pre-experience people the education programme must primarily aim to impart explicit knowledge, whereas for post-experience people it can also aim to develop implicit knowledge, skills and behaviours through Kolb's learning cycle, Figure 1, (Turner et al. 2000). Educators need to adapt their style to the audience, and to be aware of the danger of mixing students at different stages of development in the same class. (Students perhaps also need to be aware that educators have different teaching styles, some aimed at post-experience learners and some at pre-experience).

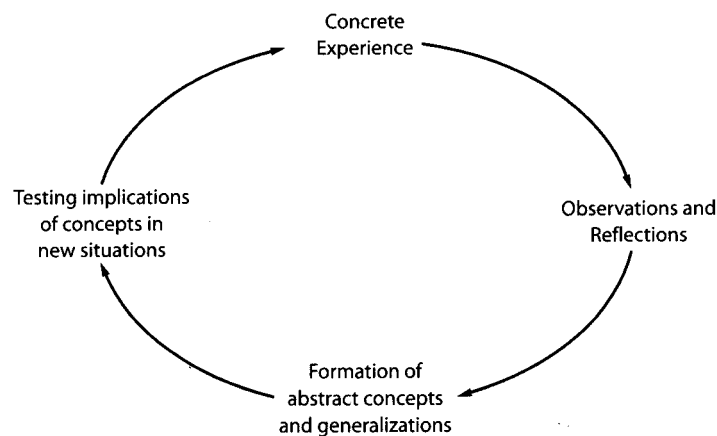


Figure 1. Kolb's experiential learning cycle

At least three other universities or colleges also offer postgraduate certificate and diploma programmes, Table 2. In the UK's university system, a postgraduate diploma is considered as being equivalent to a bachelors degree, but is offered to post experience students in a much narrower and more focused subject. The three institutions offering postgraduate diploma programmes all specialise in teaching post experience people. Certificate and diploma qualifications are also offered by several professional or other bodies. These measure attainment of very specific skills after a shorter training programme, and are discussed at the start of the next sub-section.

Works-based Education and Qualifications in the United Kingdom

Available in the UK are several different types of works-based qualification, including:

- certificate and diploma qualifications
- national and Scottish vocational qualifications, NVQs/SVQs
- certification by professional institutes

All these qualifications certificate the attainment of a specific skill or level of competence. In these cases, the qualifying bodies merely examine the candidate. It is beholden on the candidate to determine what education they require to meet the requirements of the examination, and to compose their own course of study from courses available on the open market, (Lane 2000, 2001), leading to an examination by a professional or other body. Indeed, if someone feels competent, they can sit the examination with no study, (risky). According to the European norm, EN45013, it is required that the training body and examining body should be separate, (a requirement not met by all higher education institutes, except possibly the colleges of London University).

Certificate and Diploma Qualifications

Professional Certificate and diploma qualifications are also offered by several professional bodies. The best known certificates and diplomas in this category are those offered by the Information Systems Education Board, ISEB. However, the Association for Project Management offers a range of knowledge certificates as well. There is also a certificate offered by the CCTA, a government department, in the use of its propriety project management methodology, PRINCE 2

National and Scottish Vocational Qualifications, NVQs and SVQs

National Vocational Qualifications (NVQs and SVQs) were introduced in the UK during the 1990s. These are works-based education programmes that give maximum credit to works based experiences, and to keep formal study to a minimum. NVQs and SVQs in Project Management are offered by a number of professional institutions and other bodies.

Certification by Professional Institutes

There is growing interest in certification in the UK. Two competing programmes are offered:

1. the multi-stage programme of the International Project Management Association, IPMA, operated by the Association for Project Management, APM
2. the single stage programme of North American Project Institute, PMI

The only stage of the PMI programme (PMP) is equivalent to the first stage of the APM/IPMA programme (APMP), and both are aimed at people at the beginning of their professional or management career. Both are based on a test of knowledge, with some measure of professional experience. The second stage of the APM/IPMA programme contains a further test of knowledge and experience, with some test of appropriate skills and behaviours. The third stage (Certificated Project Manager, CPM) is a rounded test of competence for experienced project managers. For more detailed descriptions refer to Turner and Huemann (2000), or to the literature of the relevant associations, or their web pages, (www.ipma.ch, www.apm.org.uk, www.pmi.org).

Primary and Secondary Education in the United Kingdom

At a workshop benchmarking the results of research into the project oriented society, (Gareis and Huemann 2001), some of the six countries present (Austria, Denmark, Hungary, Romania, Sweden, UK), claimed that all their primary and secondary school children received education in project management, and some said none did. In particular the UK and Sweden said it depends how you interpreted the question. In the UK, almost all primary school children are given termly project to complete. Some of their learning is through being set this research exercise to complete each term; it is part of the National Curriculum. The question was whether these projects counted as project management education. Some argued that because the children were given no guidance in project management systems and process, this did not count as project management education. Others argued that it did count as project management education because:

1. It gave the children a project mindset. They learnt from an early age that project-based ways of working are an important alternative to more routine ways of working. This mindset is important for the development of the project-oriented society.
2. The children are probably given guidance in simple systems and processes, appropriate to their age. At six years old, children do not have the structural skill to apply a work break down structure, nor the social skills for complex team behaviours. But they can be taught to set themselves a simple objective, work out what they have to do in a limited amount of time, and set themselves weekly tasks. They can also learn to share work amongst themselves, drawing in their different skills. That is all part of developing the mindset.

Thus most of us concluded that at primary schools in Western European countries, and particularly the UK, Sweden and Denmark, children are given education in project working appropriate to their age. The children may not be given explicit knowledge of project systems and processes, but they are given implicit knowledge of project objective setting, project scheduling and project team working.

However, at secondary schools, where perhaps the children are now ready for more explicit training in project management, none is yet given in the UK, Sweden, nor Denmark. They continue to do some of their work through projects, and so continue to develop the implicit knowledge of project working.

Provision of Project Management Education in Austria, Germany and Switzerland

We now describe project management education provided in German speaking countries. We also discuss new developments currently being undertaken in Switzerland and in Austria to further develop the project-oriented societies. In Switzerland the project SwissPM, organised by the Swiss Project Management Association (SPM), concentrates on the implementation and further development of project management education and training to develop Switzerland into a project management competence centre. The Austrian Project Management Association (PMA) has chosen a different approach to further develop the competences of the project-oriented society Austria. Within programm I austria, the strategy is to promote project management in industry, and to provide project management to families, schools and municipalities, to raise a wider understanding of the profession project management.

Tertiary Education in German Speaking Countries

Universities

In Austria and Germany there is the possibility to specialise in project management in doctorate programmes at technical or management universities. At the master degree level there are several universities that include a project management courses in their programmes.

In Austria and in Switzerland there are no programmes equivalent to a master degree in project management. At the University of Economics and Business Administration Vienna project management is formally established in a chair. Project management is offered formally as an elective within the curricula of business administration, international trade and economics at this university.

In Germany project management is formally established as a chair at some universities like the University of Bremen and the University of Giessen. There are also professor of construction project management at the Universities of Wuppertal and Dortmund. The Munich Centre for Management Development (Universität der Bundeswehr) offers an MBA in Project Management. This programme is carried out in cooperation with Henley Management College, (see Table 1). The programme is designed to prepare general managers for senior positions in project based organisations and to enable technical managers to improve their pm competence and gain a broader perspective on management.

Fachhochschulen

There are several Fachhochschulen in all three countries, with project management as an integrated compulsory module on certain degree courses, from engineering, management, export, information systems, telecommunication, tourism, art and social professions. Further there are Fachhochschulen, which give project management a much higher emphasis often in the connection with a specific industry. In all three countries there are Fachhochschulen that provide project management in a generic form suitable for all industries.

At Fachhochschulen the students might or might not be post experience. As in the UK, some universities offer postgraduate certificate or diploma programmes. There the students are post experience and study in a much narrower and more focused subject. One example for such a programme is the postgraduate programme International Project Management organised by the University of Economics and the Technical University Vienna. The participants come from all different kinds of industries and have already at least some experience in project management

Austria has three Fachhochschulen offering project management programmes. Germany has at least ten offering project management education in at least some modules. Programmes in construction and engineering especially include courses in project management. The University of Bremen has a post graduate programme (European Project Manager) in their offer, Table 3.

In Switzerland, as a part of the project management initiative, SwissPM, (mentioned above), project management was integrated in all programmes at the Private Hochschule Wirtschaft (e.g. Graduate Business School St.Gallen). Further one postgraduate programme in project

management was established. The contents of the project management education were based on a survey analysing the requirements of Swiss-German companies regarding education (Niederer *et al* 2000).

<i>Country</i>	<i>Provider</i>	<i>Specialisation</i>
Austria	Fachhochschule Dornbirn	Generic
	Fachhochschule Campus Favoriten	Telecommunication, Electronic
	Fachhochschule Technikum Carinthia	Construction
	University of Economics and Business Administration Vienna	Generic
	University of Graz	Generic
	University of Linz	Generic
Germany	FH Anhalt	
	FH Augsburg	
	FH Bielefeld	
	FH Hamburg	
	FH Hildesheim	
	FH Karlsruhe	
	FH Konstanz	
	FH München	
	FH Rosenheim	
	FH Wiesbaden	
FH Wildau		
University of Bremen	2001 not running	
GPM/RKW/		
Switzerland	Fernfachschule Schweiz, Brig	Generic
	Private Hochschule Wirtschaft	Generic

Table 3. Fachhochschulen or equivalent programmes in Austria, Germany and Switzerland

Professional Certificates and Diplomas

Professional certificates and diploma qualifications are also offered by several professional or other bodies. For instance in Germany the German Project Management Association (GPM) together with RKW offers programme (PM-Fachmann/-frau) which qualifies for the IPMA D-level certification. Also other project management education programmes are closely linked to the certification. For instance, the project management programme at the Graduate Business School St.Gallen prepares candidates for IPMA certification Level C.

Vocational qualifications like in the UK do not exist in Austria, Germany or Switzerland. However, IPMA project management certifications exist in all three countries.

Primary and Secondary Education in German Speaking Countries

At secondary school level, project management is part of the curricula in trade schools in Austria. For instance in all trade schools the pupils age 19 (last grade of trade school) have to do a project work in their specialisation they have chosen, e.g. marketing or information technology. The projects are based on real cases and are coached by practitioners. Project

management methods like project work break down structure, project environment analysis scheduling methods are applied. In an annual competition these projects are judged for an award. The criteria against which they are judged focus mainly on content, but also include whether they have done the project management professionally. Many of these pupils are taught by professionally qualified teachers. Some of the teachers in trade schools are certified at IPMA D-level.

In High Schools project work is part of the curriculum, but no project management is thought to date. Within programm I austria further attempts to integrate project management in these schools have been started. In a pilot school project management is introduced to selected teachers and pupils. The project management methods are applied for instance in event projects (school theatre, school ball, class journeys, etc.)

In Switzerland the school system is changing. Project work has been widely integrated in all kind of school types. The establishment of project management in primary and secondary education is described as one of the essential promoters to become a truly project-oriented society and stay competitive in the long run. Within SwissPM one the objectives is to integrate project work/project management according to the age level. In the age group 16 and up selected pm methods should be introduced. Even the importance of the age group was stressed, the initiative gave priority to the establishment of project management in Fachhochschulen.

Summary

The UK is probably one of the most mature societies world-wide for the provision of education in project management, with 10% of higher educational institutions offering taught masters and research degrees in project management, and many professional institutions supporting opportunities for works-based education. Areas of immediate development would be the widening of provision at undergraduate level, particularly the offering of first degrees in information systems project management, and the introduction of teaching on project management systems and process at secondary school. However, it must be recognised that, at all levels, education in project management must be appropriate for the age.

In comparison to the UK, in Austria, Switzerland and Germany there is less project management education provided. In Austria and Switzerland no master programme in project management is offered. At which level of education project management is provided also depends on the university or school system in that particular country. In Austria for instance the university system is rather rigid, so no master degree programmes in project management can be found. But in the newly established Fachhochschulen project management is offered widely. To react to the demand of educated project managers in the last few years further to one postgraduate programme that has been in existence since the early 80s two programmes have been established.

In all four countries project work has already been integrated at primary and secondary level, but that does not necessarily mean that project management methods are included. One exception to mention are trade schools in Austria, where project management is explicitly taught to pupils age 19.

Country Provision

So how does the provision of project management education in these countries described above compare with other countries? Table 4.1 and 4.2 show the status of education in project management in several countries from around the world. All the countries listed have been represented in the meetings of the global working party in education (Turner and Huemann 2000) or the benchmarking of the project oriented society (Gareis and Huemann 2001) or both. The schedule of meetings is shown in Table 5.

From Table 4.1 and 4.2, it can be seen that the UK has the greatest maturity in the provision of project management education. However, several countries are close behind, including Sweden from Europe, the USA and Canada from the Americas, Australia, New Zealand and South Africa for the Commonwealth of Nations. In the more mature countries, about 10% of universities or university colleges offer doctorates and taught masters degrees in project management. This figure is achieved by Britain, Sweden, Australia, New Zealand and Ireland. The USA, Canada, Germany, Switzerland and Denmark have about half that figure.

We would expect eventually the number of universities offering bachelor degree qualifications to grow to a similar number. Unless, that is, as argued by Turner (1995), project management is essentially a post experience qualification, and individuals will learn some other profession as their first discipline, and project management second as a post-experience discipline. We predict that there will be a growing number of programmes combining project management with another major, construction project management, information systems project management, etc.

But as societies become mature in their use of project management, and it becomes a more widely used way of working, project management must be taught at secondary and primary schools. Perhaps at primary schools, the level of teaching will not progress beyond what is done at the moment. That is all that is needed to give very young children an appreciation of the role of projects and the methods of working. But at secondary schools, older children need to be given formal instruction in project management systems and process. This process will be self propagating, as more and more people become familiar with the techniques, they will become more natural, and will percolate through all levels of education in the society.

<i>Country</i>	<i>Research Degrees</i>	<i>Taught Masters</i>	<i>Bachelors¹ Degrees</i>	<i>Diplomas & Certificates</i>	<i>Work-Based</i>	<i>Secondary Schools</i>	<i>Primary Schools</i>	<i>POS Partner</i>	<i>Education Work Party</i>
Austria	Yes	No but modules	Yes & modules	Yes	certification	Trade schools	Project working	Yes	Yes
Denmark	Yes	Yes & modules	Yes & modules	Yes	certification	Project working	Project working	Yes	Yes
Finland	Yes	Yes	Yes	No	certification	Project working	Project working	No	Yes
France	Yes	Yes	No	No	certification	No	No	No	Yes
Germany	Yes	Yes & modules	Yes & modules	Yes	certification	Project working	Project working	No	Yes
Hungary	Yes	Yes & modules	No but modules	No	certification	No	No	Yes	No
Iceland	n.a.	n.a.	n.a.	n.a.	certification	n.a.	n.a.	No	Yes
Ireland	Yes	10% & modules	No	Yes	certification	Yes	Yes	No	Yes
Italy	Yes	No	No	No	certification	No	No	No	No
Norway	n.a.	n.a.	n.a.	n.a.	certification	n.a.	n.a.	No	Yes
Romania	No	Yes & modules	No but modules	No	No	No	No	Yes	No
Russia	n.a.	n.a.	n.a.	n.a.	certification	No	No	No	Yes
Spain	Yes	No	No	No	certification	No	No	No	Yes
Sweden	Yes	Yes & modules	No but modules	No	certification	Project working	Project working	Yes	No
Switzerland	Yes	No but modules	Yes & modules	Yes	certification	Project working	Project working	No	Yes
UK	10%	10% & modules	3% & modules	3%	NVQs certification	Project working	Project working	Yes	Yes
Ukraine	n.a.	n.a.	n.a.	n.a.	certification	No	No	No	Yes

(n.a.....no answer)

Table 4.1. Country provision of education in project management (Europe)

¹ In Austria, Germany and Switzerland Fachhochschulen provide education at Bachelors Level

<i>Country</i>	<i>Research Degrees</i>	<i>Taught Masters</i>	<i>Bachelors Degrees</i>	<i>Diplomas & Certificates</i>	<i>Work-Based certification</i>	<i>Secondary Schools</i>	<i>Primary Schools</i>	<i>POS Partner</i>	<i>Education Work Party</i>
Argentina	Yes	No	No	No	certification	No	No	No	Yes
Australia	Yes	10% & modules	No	Yes	certification	Yes	Yes	No	Yes
Brazil	Yes	No	No	No	certification	No	No	No	Yes
Canada	Yes	5% & modules	No	Yes	certification	Yes	Yes	No	Yes
India	Yes	No	No	No	certification	No	No	No	Yes
Israel	Yes	No	No	No	certification	No	No	No	Yes
Japan	Yes	No	No	No	certification	No	No	No	Yes
Mexico	Yes	No	No	No	certification	No	No	No	Yes
New Zealand	Yes	10% & modules	No	Yes	certification	Yes	Yes	No	Yes
Peru	Yes	No	No	No	certification	No	No	No	Yes
South Africa	Yes	Yes & modules	No	Yes	certification	No	No	No	Yes
USA	Yes	1% & modules	No	Yes	certification	Yes	Yes	No	Yes

(n.a.....no answer)

Table 4.2. Country provision of education in project management (outside Europe)

<i>Event</i>	<i>Location</i>	<i>Date</i>
GWP	East Horsley, UK	February 1999
GWP	Philadelphia	October 1999
GWP	Vienna	November 1999
POS	Vienna	November 2000
POS	Zurich	March 2001

Table 5. Meetings of the global working party (GWP) on education in project management and the project-oriented society (POS) benchmarking research project.

Conclusion and Future Research

We conclude that project management education provisions differ in different societies because of its specific context. Some reasons for differences in project management education are:

- the maturity of the project-oriented society
- history of provision of project management education
- the rigidity of education system in the society
- government support to establish project management education
- provision of project management training by project oriented companies

Societies with a high competence as project-oriented society have a broad offer in project management education. Closely linked to that assumption is the history of provision of project management education. e.g. The UK has not only a broad offer in project management education, but also a quite long history in the application of project management in industries.

The rigidity of the education system often makes it rather difficult to introduce project management in the education structures existing. When new study types are established it is much easier to introduce new ideas e.g. a lot of project management education was introduced in Austria, when Fachhochschulen were established only a couple of years ago. The university system in Austria still is rather rigid and not able to react to the demand for project management personnel.

In some countries like the Ukraine the government supports the establishment of project management education. In the Ukraine a lot of project management education at universities (e.g. master programmes in project management) are provided. Romania has a low competence as project oriented society but provides quite a lot of project management education at university level (Gareis and Huemann). The establishment of education was supported by EU funding. Probably project management education can serve as a starting point for (further) developing the project-oriented society.

In other countries a lot of project management education and training activity can be observed within project-oriented companies to compensate the lack of project management education supported by state.

We will conduct further research regarding

- the links between project management education and the maturity of the project-oriented society
- and to develop an ideal model for project management education in the project-oriented society.

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